

REMARKS

Reconsideration and allowance of the subject application are respectfully requested.

Claims 1-27 are all the claims pending in the application. In response to the Office Action, Applicant respectfully submits that the claims define patentable subject matter.

Applicant thanks the Examiner for withdrawing the previous prior art rejections based on Rafii. Claims 1-27 are all the claims pending in the application. Claims 14-17, 19, and 20 are now rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by newly cited Fukumoto et al. (U.S. Patent No. 6,380,923, hereafter “Fukumoto”). Claims 1-5, 7, 8, 26, and 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fukumoto. Claims 6, 9-13, 18, and 21-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant respectfully traverses the prior art rejections.

Independent claim 14 recites in part:

sensing a stroke of a virtual button of the virtual keyboard by a user;

sensing positions of the user’s fingers relative to the virtual button, and
which fingers are used to stroke the virtual button; and

identifying a stroked key value corresponding to the sensed virtual button,
the sensed positions of the fingers and the fingers used to stroke the virtual button.

The Examiner asserts that Fukumoto discloses all of the features of claim 14. Applicant respectfully disagrees with the Examiner’s position.

Fukumoto generally relates to a wearable input device comprising ring-type sensor modules (FIG. 1). The wearable input device comprises a detector for detecting the shock generated at the time of striking the fingertips against a physical surface, and an analyzer for

analyzing the timing at which the fingertips strike the physical surface (the Abstract), and determining the input information based on the detection signal.

Applicant respectfully submits that there is no teaching or suggestion in Fukumoto of at least the element “sensing a stroke of a virtual button of the virtual keyboard by a user”, as recited in the claim. Fukumoto teaches inputting information based on the striking of a fingertip against a physical surface such as a desk or table (column 2, lines 15-20). The input information is determined based on which finger struck the physical surface, which combination of fingers struck the physical surface, or from the order in which the fingers struck the surface over a period of time (column 2, lines 44-49). After the fingers strike the physical surface, a shock that is generated based on the striking is detected and analyzed in order to determine the input information (column 2, lines 21-29).

Fukumoto does not teach or suggest stroking or clicking a button or key of a virtual keyboard. According to non-limiting exemplary embodiments of the present invention, plural characters may be mapped to a button of the virtual keyboard (for example, FIG. 4 of the original specification), and a key value of a clicked button is determined according to the order in which the fingers click the buttons (paragraph [24]). For example, if five characters are mapped unto a button, the first three characters may be selected by clicking the button using the first, second, and third fingers respectively, and the forth character may be selected by simultaneously using the second and third fingers (paragraph [25]). This aspect is neither taught nor suggested by Fukumoto. Fukumoto is geared toward determining input information based on the order in which fingers strike a physical surface, while the claimed invention is based on determining a key value based on the order in which fingers stroke a virtual button containing key values.

With respect to independent claim 1, and analogous independent claims 26 and 27, Applicant respectfully submits that there is no teaching or suggestion in Fukumoto of the element “a hand position and finger order determination unit that determines which button of a plurality of buttons of the virtual keyboard is stroked and which fingers are used to stroke the stroked button”, as recited in the claim. The Examiner cites FIGS. 2, 10, and 11; parts PD1-PD5; 2, lines 30-49 and column 7, lines 8-46 of Fukumoto as allegedly disclosing this element of the claim. However, as discussed above, Fukumoto does not teach or suggest a virtual keyboard, and therefore cannot teach determining which button of a plurality of buttons is clicked or stroked. Contrary to the Examiner’s assertion, although Fukumoto teaches striking a physical surface, Fukumoto does not teach or suggest a virtual keyboard as required by the claim.

Although not clear, the Examiner appears to read the claimed virtual keyboard on parts PD1-PD5 in FIG. 2 of Fukumoto. However, parts PD1-PD5 are merely light receptors (column 5, lines 33-36), and are not part of a virtual keyboard.

Further with respect to independent claims 26 and 27, the Examiner acknowledges that Fukumoto does not teach or suggest “determining the number of sensors and allocating key values according to the number of sensors”, as recited in the claims. The Examiner, however, asserts:

Fukumoto et al. teaches that for five finger-sensor combination chord pattern has 5 binary bits (fig 11D). It would have been obvious to one of ordinary skill in the art at the time of the invention that for smaller number finger-sensor combination (3) chord pattern will have only 3 binary bits and therefore disclose

key values are allocated to each of the plurality of buttons of the virtual keyboard based upon the number of sensors.²

Applicant finds the Examiner's position unclear, and submits that this cited portion of Fukumoto (FIG. 11D) has little or no relevance to the claimed invention. FIG. 11D of Fukumoto depicts a chord conversion table which is used to determine a character code based on chord patterns which represent finger-typing patterns (and are similar to the playing of chords using a piano). Nowhere does this cited portion (or any other portion) of Fukumoto teach or suggest determining the number of sensors mounted upon the user's fingers, and allocating key values according to the number of sensors. Fukumoto's conversion table is based on the finger-typing pattern of the user, and not on the number of sensors mounted on the user's fingers.

Still further, in Fukumoto, a timing as well as a stroke signal are obtained when a finger worn sensor strokes the physical surface. Input information is then determined through a code pattern made by the timing and the identified finger from the signal. referring to FIG. 11E of Fukumoto, for example, code pattern [12203] is obtained through the identified finger and detected timing and then input information "D" is obtained by a code pattern table. The physical surface in Fukumoto is not a virtual keyboard including a plurality of virtual buttons as described in the present invention. In Fukumoto, a code pattern is obtained from an identified finger stroking the physical surface and timing of the stroke and the obtained code pattern is converted to a character or number. Fukumoto does not teach or suggest virtual buttons and a plurality of key values allocated to each of the virtual buttons. On the contrary, in the present invention, a virtual keyboard includes a plurality of the virtual buttons and each of the virtual buttons is

² Page 6 of the Office Action.

allocated a plurality of the key values. Input information is determined by which virtual button is stroked and which finger or fingers are used to stroke the virtual button.

For at least these reasons, Applicant respectfully submits that independent claims 1, 14, 26, and 27 should be allowable because the cited reference does not teach or suggest all of the features of the claims. Claims 2-13 and 15-25 should also be allowable at least by virtue of their dependency on independent claims 1 and 14.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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